

# UK Patent Application

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(71) Applicant  
 Harold Birkett  
 10 Brooklands Road, Crumpsall, Manchester, M8 6JJ,  
 United Kingdom  
 (72) Inventor  
 Harold Birkett  
 (74) Agent and/or Address for Service  
 Harold Birkett  
 10 Brooklands Road, Crumpsall, Manchester, M8 6JJ,  
 United Kingdom

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 (52) UK CL (Edition L)  
 G4H HKH HKR  
 (56) Documents cited  
 GB 2033632 A GB 2022264 A GB 1492538 A  
 US 4242676 A  
 (58) Field of search  
 UK CL (Edition L) G4H HKH HKR HKS  
 INT CL<sup>s</sup> H03M

(54) Pocket sized computer or data processor

(57) A more compact pocket sized computer or data processor, in particular the keyboard, complete with fold-away screen or screens. The keypads are deliberately positioned close to each other in order that the keypads immediately adjacent to that being pressed are enclosed within the operator's finger print area and are also pressed. A predetermined number of these transmit their signals via an integrated control circuit assembly where the required signal from the keypad located central to the fingerprint area is transmitted to its required destination.

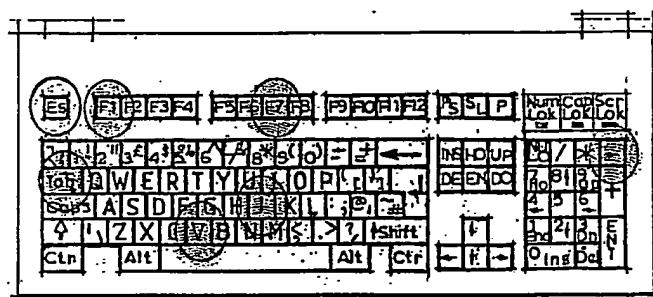


FIG 3A

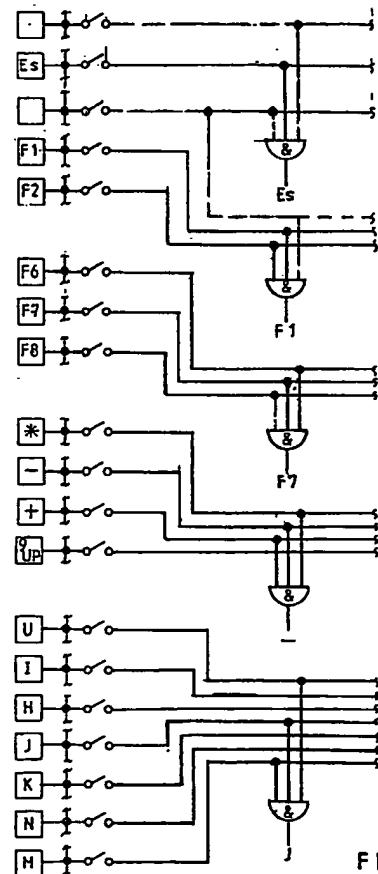


FIG 4

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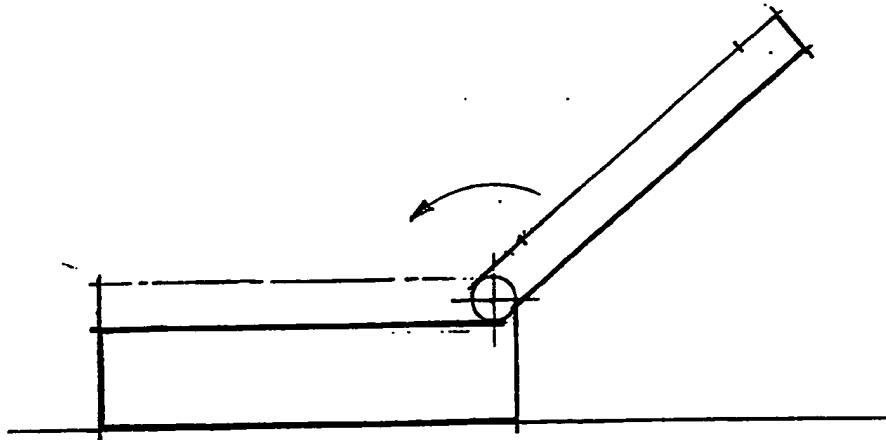
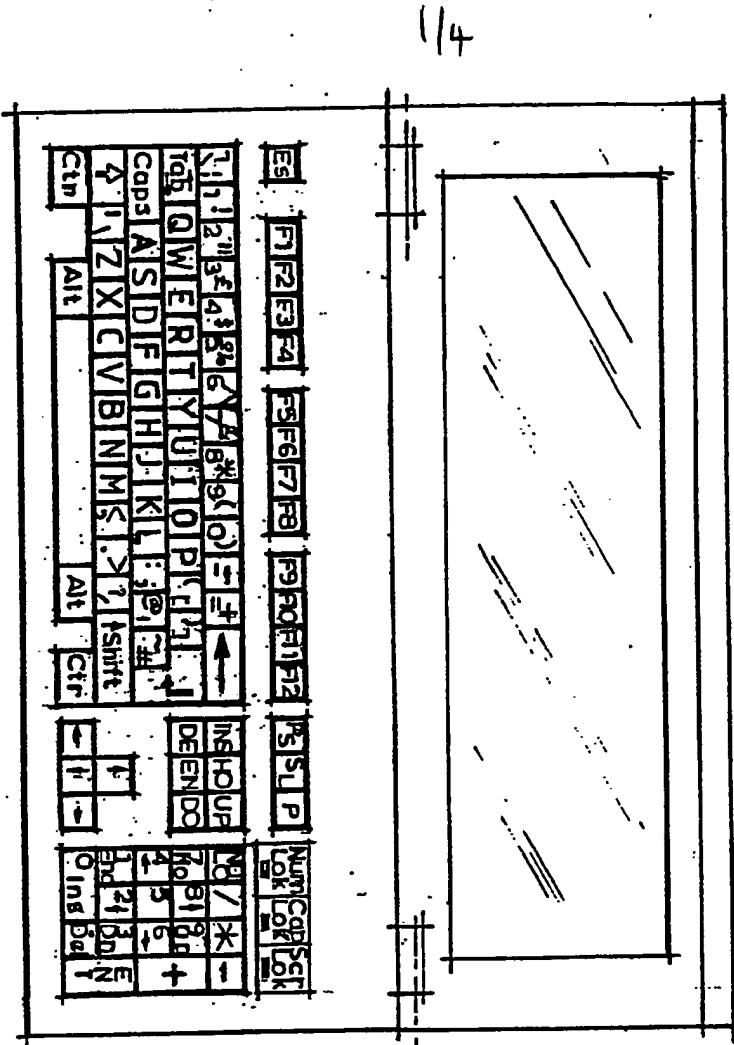


FIG. 1

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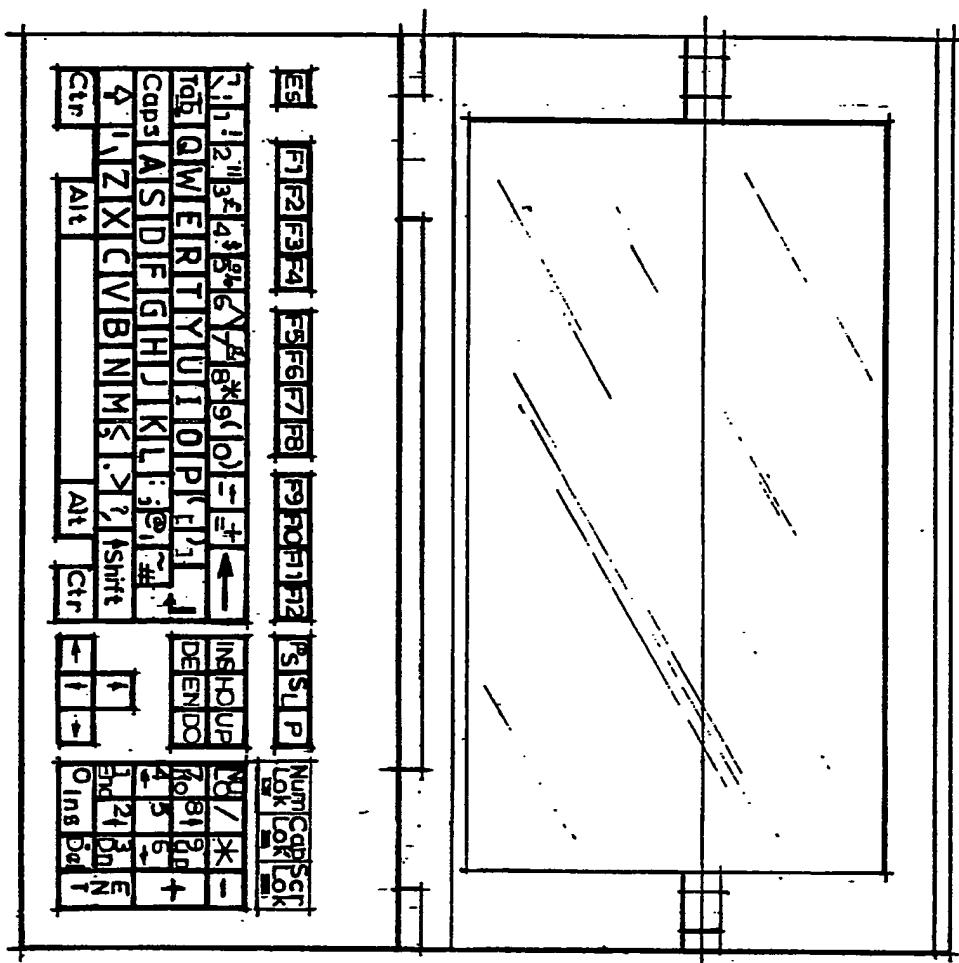
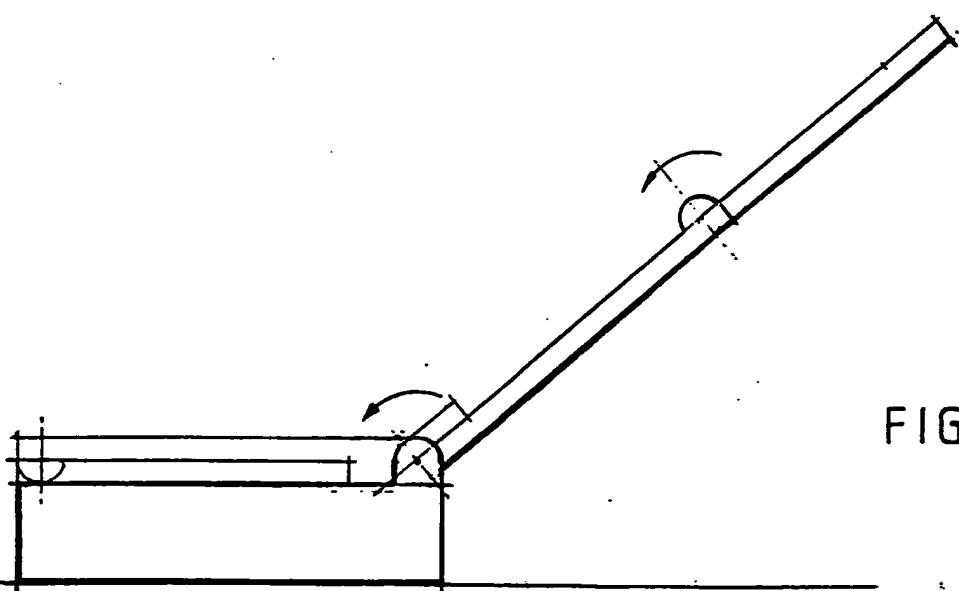


FIG. 2



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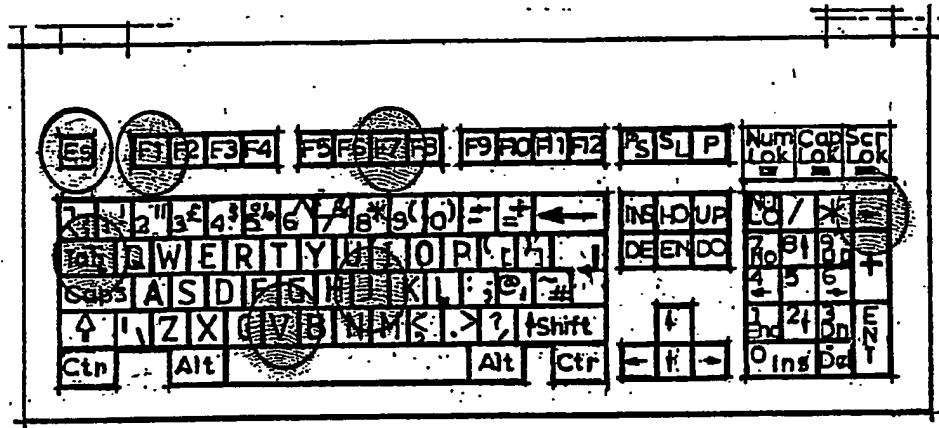


FIG 3A

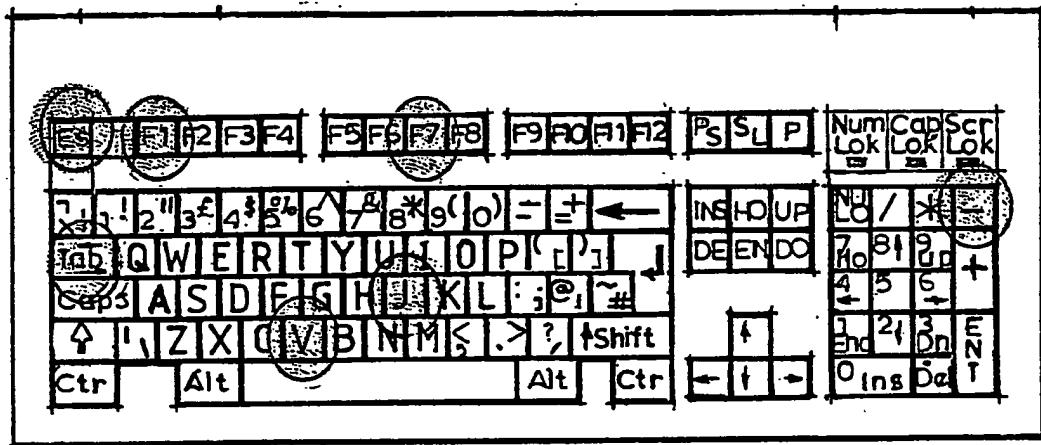


FIG 3B

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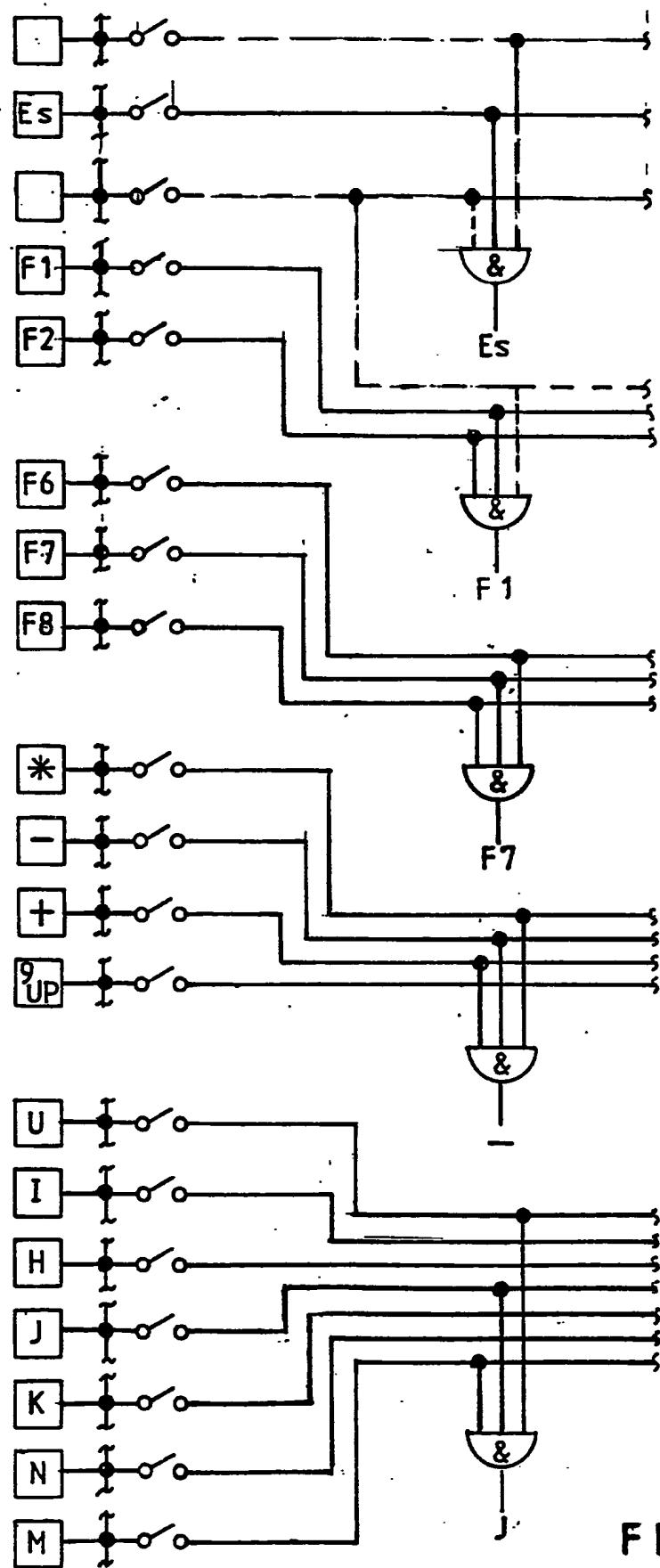


FIG. 4

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Page 1.

Improved Pocket Sized Computer Or Data Processor.

This invention relates to a pocket sized computer or data processor and in particular the keyboard which can be operated effectively and yet occupies a smaller space than that of existing assemblies containing the same number of keypads together with a display monitor or monitors to suit the size and functions of the unit. See Figs 1 and 2. The spacing of keypads on existing control assemblies is such that there has to be sufficient space between each in order that when a keypad is pressed adjacent keypads are not also pressed, the spacing being governed to a certain extent by the area covered by the operators fingerprint and its alignment.

With the proposed method the keypads are deliberately positioned sufficiently close to each other so that keypads immediately adjacent to the keypad pressed and covered by the operators fingerprint are also pressed ( the number of adjacent pads being dependant upon the keypads position on the keyboard ) resulting in the electrical signals from the switch operating pads pressed going to an integrated circuit assembly. These signals are processed via an appropriate logic gate switch assembly complete with required associated equipment in such a manner that only the signal ( or signals ) from the required keypad ( or keypads ) is conducted through to the required destination.

This method would enable the size of an assembly to be considerably reduced and in some circumstances may even enable the keyboard to be operated more efficiently. The required integrated circuit design would be based on the appropriate truth table derived from the required logic where the output from the activated logic gates circuit is designed ( together with other components as required ) to perform the keyboard functions required by a pocket sized computer or other piece of data processing equipment.

Fig 3A Shows an example of a computer keyboard with 102 keypads.

When keypad Es is pressed one signal would be transmitted.

..	..	F1	..	..	two signals	..	..	..	.
..	..	F7	..	..	three	..	..	..	.
..	..	-	..	..	four	..	..	..	.
..	..	Tab	..	..	five	..	..	..	.
..	..	V	..	..	six	..	..	..	.
..	..	J	..	..	seven	..	..	..	.

These signals are conducted to a logic gate circuit as shown in Fig 4. which shows signals Es, F1, F7, - and J.

The combination of signals used from the total number of signals transmitted when a keypad together with adjacent keypads are pressed is such that only the gate switch for the keypad located central to the operators finger print is operated the signals received from the adjacent keypads being insufficient to operate other gate switches. A larger size keyboard is shown in Figs 3B together with two additional

contd..

keypads adjacent to keypad Es, the additional circuit required being shown dotted in Fig 4.

A keyboard without visible ( or less visible ) enclosing boundaries around the keys is shown in Fig 3C in order that larger sized symbols may more easily be used for the same sized keypads and keyboard area.

The number and disposition of adjacent keypads relative to the operated keypad connected to its gate switch in order to operate and transmit the keypads signal is empirical and subject to tests when the control circuit would be made to suit.

It may be that when operating symbol 'J' for instance that 'H' and 'K' would be used to operate the 'J' operating gate switch ( as opposed to using 'U' and 'M' as shown in Fig 4 ) for instance.

It may be that some or all of the adjacent keypads around the one being operated could be used to complete the electric circuit required to operate its logic gate switch assembly, the operated keypad itself being or not being used to complete the circuit required to operate the logic gate switch.

The logic gate circuits shown are examples only, there being other types of logic gate, combination and different circuit designs which would perform the required functions based on the principles described.

The keypads can be touch or pressure operated, circuit connectors, breakers and associated equipment solid state, or by any other method or combination to suit the particular requirements of any of the switch and or control assemblies described.

The size and shape of keypads, keyboard, modification of key location and identification markings would be empirical and subject to tests.

The screen monitor, the size of which could be a single screen as shown in Fig 1, or two screens hinged together as shown in Fig 2, so that when open they form a single screen whose dimensions could be in proportion to a standard desk top computer screen or two separate screens as required.

Either of these would fold up to a compact size when not in use.

#### FIG NUMBERS AND DESCRIPTIONS.

Fig No.1. Pocket size computer with single fold away screen.  
Plan and Side View.

2.. Pocket size computer with fold away two screens hinged together which forms a single screen when fully open proportional in size to a standard computer screen.  
Plan and Side View.

3A. Example of computer keyboard having 102 keypads.

3B. Example of computer keyboard having two additional keypads ( for functions as required ) located adjacent to keypad Es.

4. Example f part of a typical logic gate circuit suitable for use with Figs 3A & 3B showing five of the keypad operating circuits.

Fig No.2 screen is not restricted in number of sections to two, nor restricted to function as one screen, each section can be a separate screen in its own right if required. Nor is it restricted to hinged screen sections. Telescopic pull out, separate plug in or any combination of screen sections could be used.

All the usual computer or processor connections and peripherals would be included to suit.

It may be that due to the different size of fingerprints, men on average would be a bigger size than women for instance, keypads together with keyboards would be made to different sizes to 'fit' the size of fingerprint in order that the required adjacent keypads only are pressed after allowing for a tolerance of accuracy relative to the centre of each keypad which is pressed.

The shape of keypads are not restricted to those shown and may be triangular, hexagon, elliptical or any other shape or combination of regular or irregular shapes including there being no or only slightly visible boundary line around each symbol thus enabling these symbols to be bigger and more visible. A coloured dot located at the centre of each symbol may result in greater speed and accuracy.

The number of signals required to operate each gate switch can be to suit as can be the logic table(s) and resulting gate switch requirements the logic gate circuits shown being examples only there being others using different types and combinations of gate switches.

The area covered by the fingerprint area must be sufficiently small so as not to go outside an area (which for all intents and purposes acts as a keypad) and accidentally pressing another keypad area and yet be big enough to cover the required number of keypads inside of this area required to operate the gate switch.

All of the above could be manufactured using known state of the art technology and components

1. A computer, data processor or control panel assembly in which the keypads are deliberately positioned close to each other so that the operators finger print area encompasses the adjacent keypads around the selected keypad so that they are also pressed.
2. A computer, data processor or control panel assembly as claimed in Claim 1 wherein all of the electric signals from each of the keypads pressed inside the fingerprint area are transmitted to an integrated circuit assembly.
3. A computer, data processor or control panel assembly as claimed in Claim 1 wherein a predetermined number of the electric signals from the pads pressed by the fingerprint area are required to activate the selected keypad at the centre of the finger print area and transmitted to an integrated circuit assembly.
4. A computer, data processor or control panel assembly as claimed in any preceding claim wherein the electric signals are processed via an appropriate logic gate assembly complete with required associated equipment in such a manner that only the electric signal from one keypad switch ( or more if required ) is transmitted out of the integrated circuit assembly to its ( or there ) required destination.
5. A computer, data processor or control panel assembly as claimed in any preceding claim wherein the integrated circuits, logic gate network and truth table which will allow only the required electric signals to pass through the assembly can be constructed using different permutations and combinations of components, gate types, logic networks and associated circuits to achieve the required results and can therefore be constructed in a variety of ways.
6. A computer, data processor or control panel assembly as claimed in any preceding claim wherein the size and weight of the keyboard assembly would be reduced using this invention.
7. A computer, data processor or control panel assembly as claimed in any preceding claim wherein the keypads are not restricted in shape and may be triangular, hexagon, elliptical or any other shape or combination of regular or irregular shapes.
8. A computer, data processor or control panel assembly as claimed in any preceding claim wherein there are no or only slightly visible lines around each symbol thus enabling the symbols to be bigger and more visible.
9. A computer, data processor or control panel assembly as claimed in any preceding claim complete with fold - away two screens monitor which are hinged together so that when opened they form a single screen.
10. A computer, data processor or control panel assembly as claimed in any preceding claim complete with fold - away two or more screens monitor which are hinged together so that when opened they form one or more separate screens.

CLAIMS. Page 5

12. A computer, data processor or control panel assembly as claimed in any preceding claim complete with fold - away one or more screens monitor substantially as described herein with reference to Figures 1 - 4 of the accompanying drawings.

## Relevant Technical fields

(i) UK CI (Edition 1 ) G4H (HKK HKR HKS)

Search Examiner

M J DAVIS

(ii) Int CI (Edition 5 ) H03M

## Date of Search

10 MARCH 1993

(iii)

Documents considered relevant following a search in respect of claims 1-12

Category (see over)	Identity of document and relevant passages		Relevant to claim(s)
X	GB 2033632 A	(SECRETARY OF STATE) whole document	1-12
X	GB 2022264 A	(GENERAL ELECTRIC) whole document	1-12
X	GB 1492538 A	(LOUGHBOROUGH CONSULTANTS) whole document	1-12
X	US 4242676 A	(PIGUET ET AL) whole document	1-12

Category	Identity of document and relevant passages	Relevant to claim(s)

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E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

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